



Tisiphone abeona abeona
Swordgrass Brown

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CLUB PLANNING AND ORGANIZING GROUP - 2008

President:	Ross Kendall	07 3378 1187
Vice President:	John Moss	07 3245 2997
Treasurer:	Rob MacSloy	07 3824 4348
Secretary:	Peter Hendry	07 3206 0048
Newsletter:	Daphne Bowden (daphne.bowden1@bigpond.com)	07 3396 6334
Librarian:	Janet Willoughby	07 3343 3949
Publicity:	Lois Hughes	07 3206 6229
Excursion Convenor:	Alisha Steward	07 3275 1186

PLANNING AND ORGANIZATION MEETINGS

A quarterly meeting is scheduled in order to plan club activities and the newsletter.
See BOIC Programme.

CONTACT ADDRESS AND MEMBERSHIP DETAILS

PO Box 2113, Runcorn, Queensland 4113
Membership fees are \$20.00 for individuals and \$25 for schools and organizations.

AIMS OF ORGANIZATION

- To establish a network of people growing butterfly host plants;
- To hold information meetings about invertebrates;
- To organize excursions around the theme of invertebrates e.g. butterflies, native bees, ants, dragonflies, beetles, freshwater habitats, and others;
- To promote the conservation of the invertebrate habitat;
- To promote the keeping of invertebrates as alternative pets;
- To promote research into invertebrates;
- To encourage the construction of invertebrate friendly habitats in urban areas.

NEWSLETTER DEADLINES

If you want to submit an item for publication the following deadlines apply:
 March issue – February 21st June issue – May 21st

September issue – August 21st December issue – November 21st

COVER

COVER

Swordgrass Brown (*Tisiphone abeona abeona*) from a painting by Lois Hughes. This is part of a larger painting, prints of which will be available from Lois – 3206 6229.



FROM THE PRESIDENT

The production of the club newsletter in colour has been well received and I thank the numerous members who have sent us their comments. Currently a grant from the Brisbane City Council partially offsets the substantially increased cost of printing the newsletter. At our recent annual general meeting (AGM) it was decided to increase annual subscriptions to \$20.00. Without further external funding this amount will not meet the annual costs of printing and postage in the future and we may need to look at a further subscription increase in 2009.

At the AGM, I reported on suggestions for renaming the newsletter. The current preference of the planning committee is “Metamorphosis – The Magazine of the Butterfly and Other Invertebrates Club”. However, I invite each of you to give the matter some thought and to send in your comments and suggestions. We plan to have the new name on our 50th issue in September.

Thank you to all contributors to this newsletter. I hesitate to mention some and not name all but welcome three new contributors: Wesley Jenkinson for his detailed article on the life cycle of *Lucia limbaria* – the Grassland or Chequered Copper; Ian Menkins for a fascinating account of the egg laying behaviour of the mountain katydid; Roger Grund and Frank Jordan for recounting the story of solving the riddle of the mystery Type 4 eggs.

Best wishes

Ross

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Varied Swordgrass Brown Butterfly, *Tisiphone abeona* (Donovan, 1805) – a personal and historical perspective

Without doubt the Swordgrass Brown is my favourite butterfly species and I am not alone in this regard. The “father” of Australian butterflies, Dr. Gustavus Athol Waterhouse (1877-1950), comments in his popular 1932 book *What Butterfly is That?* : “This is the most remarkable butterfly in Australia. Its study illustrates an event that has not often been observed – the formation of no less than seven races in a continental area. Races more often arise in islands, limited by definite barriers not liable to be broken, except at long intervals of time. Probably similar conditions exist nowhere else than in Australia.”



Tisiphone abeona albifascia
Photo by Peter Hendry

He elucidates : “The seven races fall naturally into two groups of three with an intermediate hybrid race at Port Macquarie. The three races from the south have a very broad orange band on the forewing and no band on the hindwing upperside. The three races to the north have white markings on the upperside of both wings; only faintly developed in the northernmost race.”



Newly emerged female *T.a.aurelia*
Photo by John Moss

He concludes: “This butterfly illustrates how species can be formed in nature. If the barriers in the past had not been broken, what I now consider one species, would be two or three. Even now it is difficult to convince some entomologists that the seven races are the one species.”

Four years earlier in his second monograph of the genus *Tisiphone*, Waterhouse (1928) stated : About fifteen years ago, I recognized that the butterfly was one that was especially worthy of study. I then began an investigation of this species and its geographical races, which has continued almost without interruption ever since. This investigation has already borne important results and it is even now far from completed



....” He further commented : “The species and its races are always eagerly sought for by collectors in other parts of the world, and they are always spoken of as some of the most handsome Satyrids in the world.”

Waterhouse went on to relate the historical origins of the species and quotes the English taxonomist Donovan, who in 1805 described and first figured the species (the nominate subspecies, now *Tisiphone abeona abeona*). “He says : ‘There are few insects more striking than *Papilio abeona*. This appears to be one of the more common species of the Butterfly tribe in many parts of the Australasian regions; we receive it in this country not very infrequently among other insects from (the) vicinity of the English Settlements at Port Jackson.’ ”



T. a. morrissi

Photo by Ross Kendall

bushland, along the East Hills railway line, where it still exists today. Lois Hughes’ attractive cover painting illustrates two of the specimens I caught at that time. Because of its orange and chocolate brown, I used to refer to it as the “Jaffa butterfly”!

In his second monograph, Waterhouse asked (with respect to the northernmost race, *Tisiphone abeona rawnsleyi*) “The question should be settled as to whether Caloundra is its southern limit and how far north does the race actually extend.” This can now be answered fairly accurately. Rod Eastwood tells me that he has observed the subspecies in suitable habitat, opposite the southern end of Bribie Island, at Toorbul Point (as in Braby, 2000). I have personally taken it in wallum

G.A.W. added “Even at the present time *abeona* can be found within a few miles of the centre of Sydney, and in the early days of the settlement here, must have been very common where the busiest part of Sydney now stands.” (Presumably this would have to include the Tank Stream.) “No doubt if Captain Cook had landed on the northern rather than the southern shore of Botany Bay, this species would have been caught by Sir Joseph Banks in 1770.”

As a lad, living in a suburb of Sydney in the 1950’s and 60’s and not far from Botany Bay, I often encountered this butterfly in local



T. a. morrissi – female

Photo by Ross Kendall



sedgeland on the southern end of Fraser Island in January 1987 (as in Dunn and Dunn, 1991 and Sands and New, 2002) and at Tin Can Bay on the mainland. It also extends north-wards to about 10km north of Maryborough. To the west it occurs on the Blackall Range from Mapleton/Flaxton to Maleny and sometimes appears on Mt. Beerburum, the most southern of the Glasshouse Mountains (R. Eastwood, pers.comm.)

Waterhouse's 1928 paper was significant for two main reasons. Firstly, he included within it a description of what he called "The finest and most heavily marked of all (the races)" and "a large and magnificent race, larger than any of the others." He was referring, of course, to *Tisiphone abeona regalis* which he had collected at Barrington Tops on the Great Dividing Range, west of Newcastle.

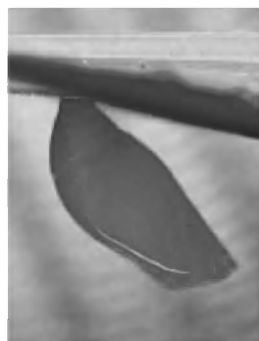


T. a. regalis larva
Photo by Peter Hendry

This population and that from the Gibraltar Range west of Grafton (with large creamy-white bands) is certainly spectacular in its form. Further north, in the Tenterfield to Stanthorpe region, it loses many of its cream markings and is a much darker insect but equally as large. In recent years an isolated population has been found further northeast in the Mt. Barney National Park complex of the Border Ranges (Sands and New, 2002). It is interesting to speculate on whether this extreme of cline should be deserving of subspecific status.

The second commentary of significance was Waterhouse's explanation of the origin of the (hybrid) race "*joanna*", and an opinion on the speciation of ancestral *Tisiphone*, in relation to geophysical and botanical influences since early Pliocene times (up to 5 million years ago).

Little work had been done on elucidating the mysteries of this species since Waterhouse's time until 1968, when A.M. Lucas from Flinders University's School of Biological Sciences worked on clinal variation in colour and pattern in coastal populations of the butterfly. He actually measured certain characters and produced statistical evidence in support of Waterhouse's geographical races/subspecies and subspecies groupings (Lucas, 1969). For this study, Lucas used mainly his own specimens, collected in the field during the months of February and March 1968. It is not clear from the literature whether or not this paper was the result of a university based thesis for higher degree.



T. a. morrisi pupa
Photo by Peter Hendry



Not long after Lucas, another worker, B.A. Conroy, at Sydney University, did similar work for his (unpublished) PhD thesis. His landmark work, which was comprehensive and thorough, involved extensive field studies with both coastal and montane populations of the butterfly. The information he obtained has become invaluable in helping to draw up conservation strategies, especially for the unique hybrid population *Tisiphone abeona* ‘joanna’ at Port Macquarie (Conroy, 1971).



Newly emerged females *T.a.morrissi*
(above) and *T.a.aurelia* (below)
Photo by John Moss

There are issues involving the conservation of some subspecies and populations of this species. Several projects, as part of recovery plans, have already occurred for subspecies *albifascia* and *morrissi* which ironically are quite secure in their natural geographical distributions. The same cannot be said of the “joanna” hybrid population at Port Macquarie and another unnamed taxon that occurs on the Comboyne Plateau to the southwest. It would be tragic if these interesting and unique populations were to disappear due to lack of action on the part of government agencies and municipal authorities, whilst scientists and other stakeholders were debating among themselves the relative merits of whether to call these taxa subspecies or local populations (which can have a bearing on whether legal protection can be afforded).

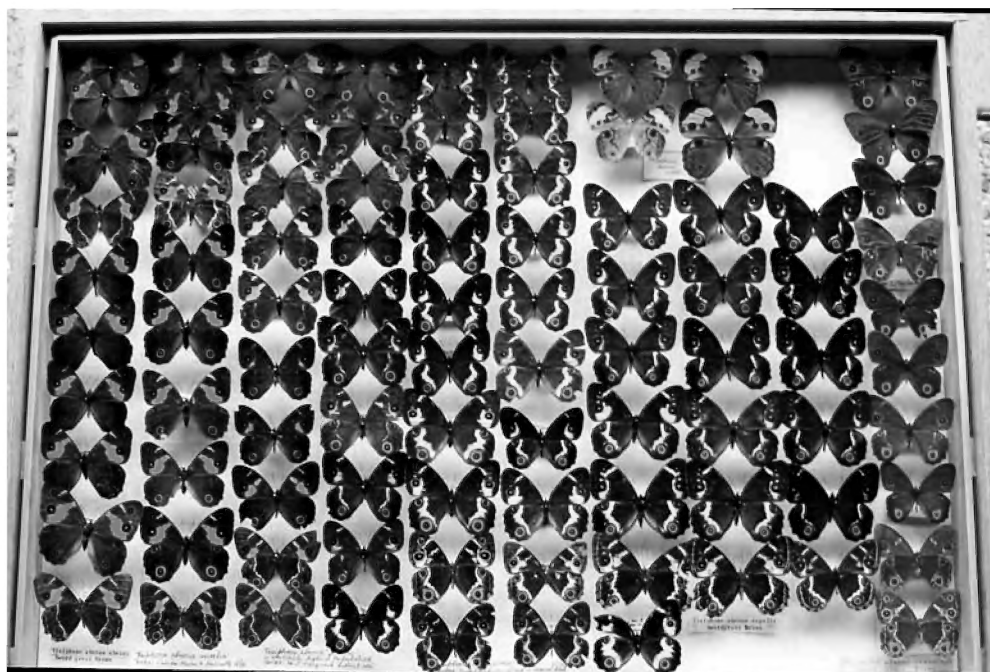
The threatening processes impacting on pop. “joanna” and to some extent subspecies *rawnsleyi* and *morrissi* [namely: urbanization (including road construction), cane farming and other agricultural practices, sand mining, fire and weed invasion] have been identified and/or restated in several recent publications including Common and Waterhouse (1981), Dunn et al (1994), Braby (2000) and Sands and New (2002).

As far as the *morrissi* subspecies in southern Queensland is concerned, I made comment in December 2003 (BOIC Newsletter No. 31) in a report on a translocation project involving this butterfly, that “the bypass road at Tugun may not now go ahead – good news for the only remnant site for the (subspecies) on the Gold Coast”. Sadly, for the butterfly and its associated pristine wallum environment, this did not happen and as of June 2nd 2008 (next month, as I write) interstate vehicles will be traversing an irreplaceable part of its unique habitat!

There is some good news, however, as a small remnant population of *morrissi* still exists in southern Queensland, on private property, at Jacob’s Well. This was



discovered by Glenn Leiper (one of our members) a few years ago, but is currently threatened by some of those same processes identified above for “*joanna*” (Sands and New, 2002).



Entomological drawer showing 6 subspecies of *Tisiphone abeona* (L to R, in columns, *T.a.abeona*, *T.a.aurelia*, *T.a."joanna"*, *T.a.morrisei*, *T.a.regalis* and *T.a.rawnsleyi*) plus 4 specimens of the related species *T.helena* (top right hand side) Photo by John Moss

Finally, returning to G.A. Waterhouse and his publications, it would be remiss of me not to mention the landmark publication co-authored by George Lyell in 1914. This book, “The Butterflies of Australia”, which is rarely seen these days, annotated and illustrated all the Australian butterflies then known. The authors devoted a whole colour plate to 12 painted illustrations of the “remarkable hybrid race *joanna*” and made a comparison with *abeona*, *albifascia* and *morrisei*. We have reproduced it in this issue for our readers.

Addendum : An abbreviated chronology of the genus, species and subspecies of *Tisiphone abeona*. This shows the dates at which various species and subspecies were described, the authors and the publications.



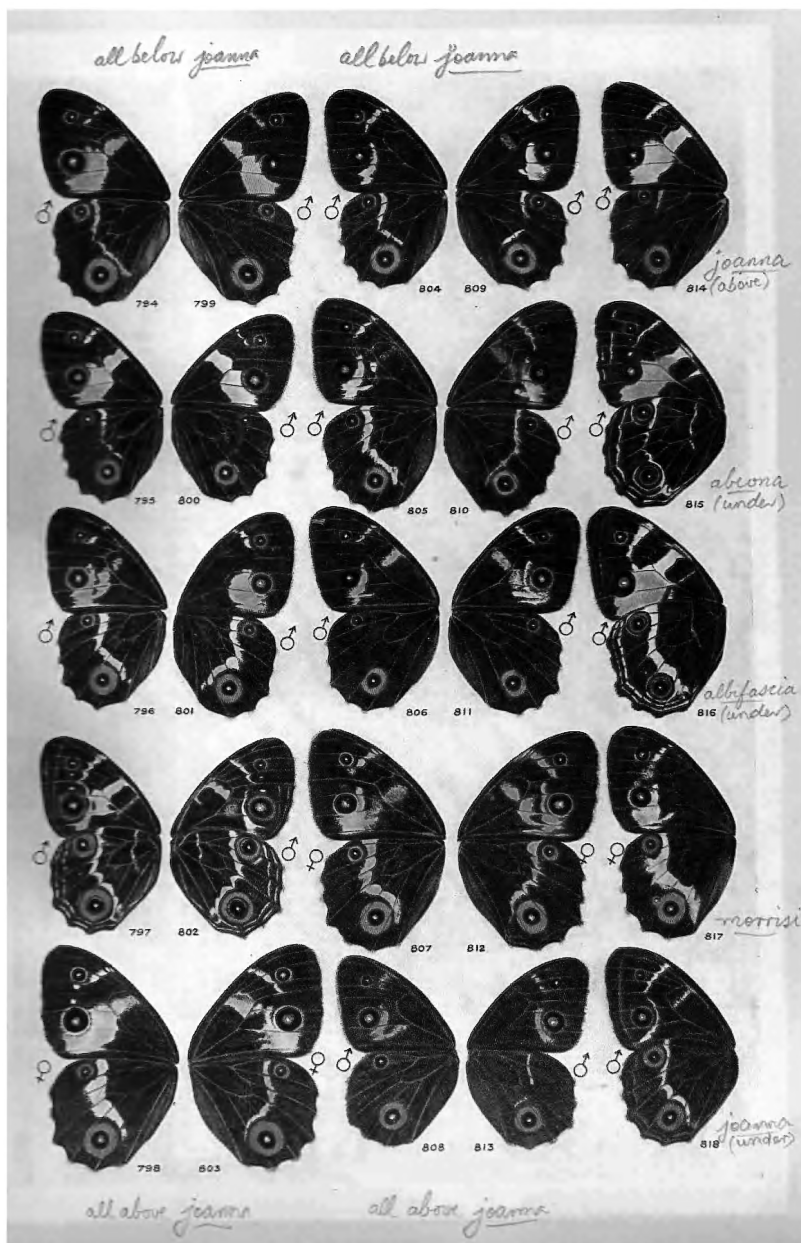
Donovan 1805	Insects of New Holland	<i>T. abeona</i> as <i>Papilio abeona</i>
Hubner 1816	Verzeichniss bekannter Schmetterlinge	Erected the genus <i>Tisiphone</i>
Butler 1866	Annals Magazine Natural History	<i>T. a. joanna</i>
Miskin 1876	Transactions Entomological Society (London)	<i>T. a. rawnsleyi</i>
Olliffe 1888	Proceedings Linnean Soc. N.S.W.	<i>T. helena</i>
Waterhouse 1904	Proceedings Linnean Soc. N.S.W.	<i>T. a. albifascia</i>
Waterhouse 1914	Australian Zoologist	<i>T. a. morrissi</i>
Waterhouse 1915	Australian Zoologist	<i>T. a. aurelia</i>
Waterhouse 1928	Australian Zoologist	<i>T. a. regalis</i>
Tindale 1947	Rec. S. Aust. Museum	<i>T. a. antoni</i>

John Moss

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8. Waterhouse, G.A. 1928. A second monograph of the genus *Tisiphone* Hubner. *Aust. Zool.* **5**:217-240.
9. Waterhouse, G.A. 1932. *What Butterfly is That?* 291pp., 32 pls. Angus and Robertson, Sydney.
10. Waterhouse, G.A. and Lyell, G. 1914. *The Butterflies of Australia. A Monograph of the Australian Rhopalocera*. 239 pp., 43 pls. Angus and Robertson, Sydney.





Tisiphone colour plate from "The Butterflies of Australia" Waterhouse and Lyell 1914



PRESIDENTS REPORT FOR AGM 19TH APRIL 2008

My reports in our quarterly newsletters have dealt with significant issues during the year and I believe it is not necessary to repeat them today.

I thank all members of the management and planning committees for their ongoing contributions to the success of the club activities and in particular the production of our newsletter. Daphne must be singled out for her dedicated and time-consuming work of maintaining membership records, responding to member queries, emailing news updates to members, preparing materials for our outdoor displays, purchasing books and other materials and patiently editing the club's newsletter.

Many members have again contributed to our newsletter in the last year. The newsletter remains the major point of focus for most of our members with the quality of its articles and its production in colour being warmly welcomed. It has been suggested that the newsletter be given a new name and early responses favour the suggestion "Metamorphosis – the Journal of The Butterfly and Other Invertebrates Club." The issue will be debated further.

Various displays held in the last year allowed us to provide contact with the wider community. Sales of host plants at the Society for Growing Australian Plants show in September were very successful.

Attendance at club outings varied from substantial to negligible and the challenge remains for us to provide meaningful and interesting activities.

We are also challenged by the task of effective use of the newly acquired microscope/camera assembly and the laptop computer/data projector combination.

A year ago I spoke of producing a small handbook on our local mistletoes and can now report that the project has grown into the production of a field guide to the mistletoes of South-east Queensland. Our goal is to have the book published by the end of this year.

I look forward to your participation in the club's activities in the coming year.

Ross

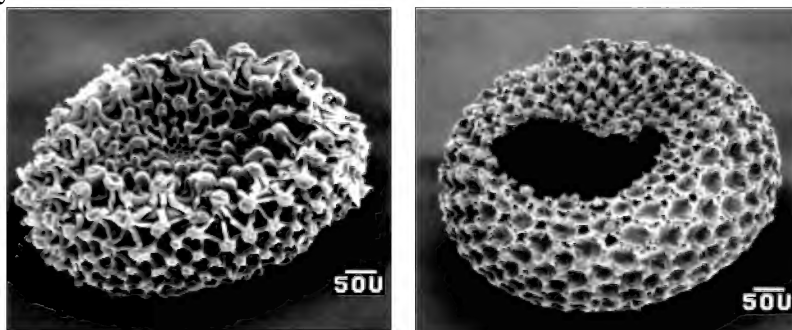
ITEMS OF INTEREST

A new hostplant for the Speckled Line-blue butterfly (*Catopyrops florinda halys*) in the Brisbane area

Author Roger Grund during 1996 undertook a study of the egg distribution of the Bitter-bush Blue butterflies (*Theclinessthes albocincta* and *T. hesperia*) based on their preserved eggs on dried specimens of their hostplants *Adriana* species (Bitter-bush)



from the Perth, Adelaide, Canberra, and Brisbane Herbaria. The study radically expanded the then known distribution range of the two butterflies. However, one egg type recorded (Type 4 in the study) was different to the *Theclinessthes* egg in having a trigonal facet pattern (Fig. 1), compared to *T. albocincta* that had a rhomboid facet (Fig. 2). The Type 4 egg occurred on the *Adriana* collected between Brisbane and Mackay.



Figs 1,2: SEM photos of Type 4 egg (on left), & Bitter-bush Blue egg from central Qld (on right)

(The original *Adriana* from Queensland was referred to as *A. glabrata* in the study paper, but subsequent repeat studies by plant taxonomists using an inordinate number of name changes presently have the plant documented as *A. urticoides*). Later in 1998 a similar Type 4 egg was seen by Roger on *Adriana* growing at Fitzroy Crossing (Kimberleys WA), where at the time *Zizeeria karsandra* (Spotted Grass-blue) and *Catopyrops* type butterflies were flying in the vicinity of but not about the *Adriana*. The former butterfly has trigonal faceted eggs and it was thought at the time it might be the owner of the egg.

Author Frank Jordan was intrigued by this aspect of the research by Roger and resolved to one day find out which mystery butterfly it was that was laying the Type 4 eggs. He eventually got around to planting out some *Adriana urticoides* in several areas of Brisbane, including his garden at West End in inner city Brisbane and again in the butterfly wetland at the Woodford Folk Festival site, where after several years' growth, a male and female plant survived. Eventually during the summer of 2006-07 he saw several Speckled Line-blue butterflies perching on and flying around these plants at the festival site in a similar way to their usual host plants (*Pipturus* and *Trema*). At the time he did not find any eggs or signs of caterpillar chewings on the *Adriana*.

Finally in late March of 2008, Frank spotted a Speckled Line-blue female laying eggs (Fig. 3) on the male *Adriana* growing in his own yard (Fig. 4). The butterflies had





Fig. 3: Egg of Speckled Line-blue



Fig. 4: Speckled Line-blue female in Brisbane laying a single egg on the underside of *Adriana urticoides*

been noted during the previous months breeding on the *Pipturus* but he had seen no female activity around the *Adriana*.

On closer inspection he noted additional eggs on the leaf undersides of the *Adriana* and larvae on the flower spikes. Could he have found the holy grail? Lots of Green-head Bull-ants (*Rhytidoponera metallica*) were present with the larvae, but not obviously attending to them, as they were mainly interested in the nectary glands on the *Adriana* (Fig. 5). During his long experience with butterflies, he had often seen



Fig. 5: Larvae of Speckled Line-blue on male flower spike of *Adriana*, accompanied by Green-head Bull-ants (*Rhytidoponera metallica*). Larvae feed by boring into buds and eating the internal pollen parts.

these ants to attack butterfly larvae, but not these ones. Out with the camera! (*Adriana* are dioecious, having separate male and female plants that have numerous nectary glands that attract ants. Larvae are attended symbiotically or at least are harmlessly associated with most ants in the general area of the hostplants, as the ants also feed from the nectary glands).

He collected a mature larva and allowed it to pupate, then kept a close watch, and eventually in early April a Speckled Line-blue emerged during a morning (Fig. 6), confirming that the butterfly can complete its lifecycle on the *Adriana*.

When the Type 4 egg was compared with the Speckled Line-blue egg it was realised they are essentially indistinguishable, and one had to conclude they are likely the same and therefore the mystery owner of the Type 4 butterfly egg in Queensland is the Speckled Line-blue.



For those people into gardening, the *Adriana* is a nice leafy plant with large trilobed, pubescent leaves, and the males produce an interesting long, green or purple terminal flower spike. It is potentially fast growing and amenable to repeated pruning, with the size of the plant dependant on how much water it receives, with less water producing a smaller bush with smaller leaves. If you want an alternative host for the Speckled Line-blue in your garden then try male *Adriana*. For people in central Queensland you will also be providing for the rare Bitter-bush Blue butterfly, but around Brisbane it is believed this butterfly is now extinct.



Fig. 6: Freshly emerged Speckled Line-blue reared on *Adriana*

Photos by R. Grund and F. Jordan

Roger Grund & Frank Jordan

References:

- GRUND, R. 1996. The distribution of *Theclinesstes albocincta* (Waterhouse) and *Theclinesstes hesperia littoralis* Sibatani & Grund, based on herbarium records of eggs (Lepidoptera: Lycaenidae). *Aust. Ent.* **23**(4): 101-110.
- GRUND, R. 1998. New foodplant recordings and biological observations for some Western Australian butterflies. *Vict. Ent.* **28**(4): 65-68.

Ed. Note – *Adriana* spp. in family Euphorbiaceae, *Pipturus* in family Urticaceae and *Trema* in family Ulmaceae

Life History Notes on the Grassland or Chequered Copper, *Lucia limbaria*: Lycaenidae Wesley Jenkinson, Beaudesert, Queensland 4285

Coincidentally, while reading Andrew Atkins' and John Moss' articles about this interesting small butterfly in the last newsletter (Issue No. 48), several larvae were currently being raised at my residence.

During a sunny humid day in February 2008, at my home in Beaudesert in South-east Queensland, at around 2.00 pm a female of this species was observed feeding on the small yellow flowers of the exotic *Oxalis corniculata* growing in my lawn. As I watched, the female began walking across the top of the plant and began ovipositing. Once a suitable position was found the female curled the abdomen below the leaf and laid eggs on the underside of the leaves. The eggs were laid in two separate small



clusters of three and four. Several eggs were also laid singly. Small black ants were also present nearby.



Eggs

The eggs are light grey in colour, approximately 0.4 mm high and 0.8 mm wide. A very unusual feature for an Australian butterfly species is the numerous long fine 'hairs' attached to the eggs from the female's abdomen.

Several of the eggs were collected and larvae then raised in captivity. Seven days later, the first instar larvae all emerged before 6.00 am in the morning. The larvae did not consume the eggshells after emergence.

First Instar larva



are very sluggish when they move about.

The tiny larvae feed on the small soft leaves of the host plant, chewing the leaf surface. As the larvae progress in size the larger larvae consume the leaves from the outer edge. The larvae feed during the day in captivity and rest amongst the leaves of the host plant. (In natural conditions the larvae apparently rest in attendant ant burrows – Fisher, 1978; Braby, 2000.) They remain stationary for long periods and



Final Instar

The larval instars are quite similar in appearance although the colours of the final instar are more clearly defined and the lateral hairs are more prominent. The final instar can attain a length of 18mm.



Pre-pupa

The larvae have an unusual colour transformation, changing from brown into a bright green pre-pupa. This change of colour may perhaps be less dramatic when occurring in the natural dark brown surrounds of the attendant ant burrows.



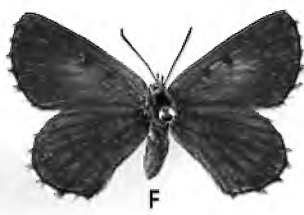


Pupa

The larvae pupate loosely, not being attached by anal hooks or a central silk girdle. (Possibly within the ant burrows the pupae become wedged allowing the adult to crawl free from the pupal shell) The smooth pupae are very delicate compared with many other lycaenid pupae and could

be easily damaged. The pupal colour changes from the pre-pupal bright green to a light greenish brown colour. The pupae can attain a length of 12mm.

The life cycle duration from the egg to an adult at Beaudesert was 49 days (from the 16th of February 2008 to the 5th of April 2008): the egg 7 days, larva 31 days and pupa 11 days respectively. These observed times might vary slightly in the natural environment within the ant chambers.



The adults can occasionally be observed flying into residential areas in the township of Beaudesert. During hot sunny conditions the

adults fly actively and can be quite difficult to follow. Even during these conditions the adults can be quite inconspicuous, as they will settle for long periods with their wings closed.

In the Beaudesert region, adults are recorded in the hotter months of the year, being on the wing after spring storm rains in November through the summer months until March. The adults are more frequently encountered in the summer months between December and February. I also have one record of a freshly emerged female at Beaudesert for the 4th July 2004. At times the species can be locally common at the breeding sites.



Lucia limbaria

It can now be confirmed that the exotic *Oxalis corniculata* is a host plant for this species and that the larvae can be successfully raised without the attendant ants (Moss, 2008). At times fresh adult



specimens of the butterfly appear in grassy paddocks where *Oxalis* seems to be absent. Perhaps the species may be utilising another host plant in these situations.

This small copper is certainly one of the pretty smaller species that just ‘shows up’ unexpectedly.

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Atkins, Andrew, 2000. *Notes on the Grassland or Chequered Copper, Lucia limbaria: Lycaenidae*. BOIC Newsletter Issue No. 48

Braby, M.F., 2000. *Butterflies of Australia – Their Identification, Biology and Distribution*. vol 2. CSIRO Publishing

Fisher, R.H., 1978. *Butterflies of South Australia*. 272 pp. Govt Printers, South Australia

Moss, John, 2008. *Further notes on the Small, Grassland or Chequered Copper Lucia limbaria* Swainson, 1833. BOIC Newsletter Issue No. 48

The following new information is of observation and/or collection of adults of this species.

Additional occurrence records of the Chequered Copper (*Lucia limbaria*)

Location	Latitude	Longitude	Date	Collector
Mt Bolivia NSW	29°18'S	151°55'E	06/02/2005	Graham Forbes
Canberra ACT	35°16'S	149°05'E	24/09/1988	Graham Forbes
Bolinda Darraweit Road, Darraweit Guim Vic	37°25'S	144°52'E	16/12/1952	Graham Forbes
Grampians Vic	37°09'S	142°31'E	20/03/1985	Graham Forbes
Sumner Park Qld	27°33'S	152°56'E	31/10/2007	Graham Forbes & Greg Daniels
Toowoomba Qld	27°32'S	151°58'E	19/02/2000	Graham Forbes
20km south of Warwick Qld	28°17'S	151°59'E	26/01/1988	Graham Forbes
Leyburn Qld	28°01'S	151°35'E	17/03/1996	John Moss
Upper Thane Ck, Warwick Qld	28°14'S	151°41'E	30/11/2003	John Moss
Beaudesert Qld	27°59'S	152°59'E	14/02/2004 04/07/2004 03/11/2007 12/01/2008 26/01/2008 16/02/2008	Wesley Jenkinson Wesley Jenkinson Wesley Jenkinson Wesley Jenkinson Wesley Jenkinson Wesley Jenkinson
Bunya Mountains National Park Qld	26°51'S	151°35'E	17/03/2007	Wesley Jenkinson
Cotswold Qld	27°31'S	151°53'E	15/11/2003	Wesley Jenkinson



Kerry Qld	28°06'S	153°01'E	13/01/1996 05/12/1997 22/12/2001	Wesley Jenkinson Wesley Jenkinson Wesley Jenkinson
Lamington Qld	28°14'S	153°07'E	01/01/1996	Wesley Jenkinson
Leyburn Qld	28°01'S	151°35'E	08/02/1987	Wesley Jenkinson
Maroon Dam Qld	28°10'S	152°38'E	23/01/1999	Wesley Jenkinson

Photos by Wesley Jenkinson

The egg laying habits of captive *Acripeza reticulata* (Guerin)

I am writing to document my observations of the remarkable egg-laying habits of the mountain katydid *Acripeza reticulata* (Guerin).

In early March 2008, I constructed an enclosure from an old wire bird cage with the intention of keeping several specimens of *Acripeza reticulata* for study. I removed the bars from the cage and stitched aluminium gauze to the main frame with nylon. The



Female Katydid (Wild specimen photographed at Cunningham's Gap) by Ian Menkins

sliding entrance was replaced with a much larger hinged gate to provide easier access. The design provided maximum ventilation and light for the captive specimens. Later that month I caught some specimens of female *Acripeza* on private property and placed them in the enclosure.

I fed the katydids on Yarrow herb (*Achillea millefolium* L.) and several native and exotic "fireweeds" (*Senecio*

spp.) and other daisies. The main feeding times of the *Acripeza* are twice daily, in the morning and evening, with occasional feedings observed at odd times through the day and night. They rely on the rays of the sun to sufficiently heat up their bodies, thereby increasing their metabolic rate. They often seek food after a period of basking in the morning or evening sunlight.

After feeding, a female may find a warm place to bask or roost, but often she will look for a suitable place to lay eggs. To lay an egg, the female arches her body until her mouthparts are almost touching her ovipositor. She then smears a gel-like substance from her mouth on to the egg as it emerges, which effectively glues the egg in place.

In the all-gauze environment of my enclosure, katydids were observed to mainly attach their eggs to the sides and top of the cage. The eggs were frequently found



around the uppermost edges and in the corners, and only rarely found close to the bottom. The cage was placed on the ground at times, but the katydids never changed their preferences for egg placement.

A similar study conducted in the 1930s-40s found that captive specimens always attached their eggs to the roof of a large muslin enclosure (Coleman 1938a, p. 28). The researcher at the time assumed this to be a heliotropic response (Coleman 1938a, p. 28). Heliotropism is a scientific term which basically means “a compulsion to go towards the light”. This researcher guessed that the high placement of eggs might indicate that katydids normally rely on the direction of sunlight to guide them towards suitable ovipositing sites. Therefore sunlight was thought to be determining their behaviour by eliciting an instinctual response.

So the theory of heliotropism provides an explanation for the elevated egg placement in captive *Acrisepeza*. The theory suggests that a captive katydid will be “compelled” to place her eggs as close as possible to the dominant light source. We can infer from this that the placement of eggs is predictable, so we can potentially use it to predict egg-laying behaviour in the wild. The most common objects that can be climbed in the katydid’s native habitats are grasses, bushes, trees, and rocks, so we can reasonably predict that eggs will be placed high up on such objects.

However, Edith Coleman added in her paper that she never found any eggs on the branches of trees or shrubs in the wild, although she expected they should be there (Coleman 1938a, p. 28). One of my observations also cast some doubt on the heliotropic response theory. I noticed that my captives had never once placed an egg on any of the climbing branches in my cage, despite having each laid dozens of eggs. The branches were rough-barked *Melaleuca*, grey to light brown in colour, and ranging in size from 4-8 mm thickness. They had been inserted on various angles in the cage just after its construction. The absence of eggs on these branches was puzzling. I wondered at the time if the katydids were spatially disoriented inside this all-gauze, hanging enclosure, or if the branches were not the right thickness, colour or texture. Still, I saw no reason at the time to dispel a hypothesis of “heliotropic ovipositing”, because 1) the katydids were laying their eggs most frequently on the uppermost parts of the cage, while 2) the cage was already hanging 2-3 metres off the ground for most of the day in an area of bright daylight.

So I largely accepted the theory that egg placement was determined by a heliotropic response, and I turned my attention to a study of food plants and potential nutrient sources.



Some weeks after placing the specimens in captivity, I decided to add some small saucers of dry clay and garden soil. The food plants of the *Acripeza* are generally regarded as being toxic, so I guessed that the insect may require kaolin or minerals to aid its digestion or bolster its nutrient levels. The garden soil I chose was dark brown in colour, very loose and friable, and quite fine-textured. The clay had been sourced from a roadside embankment and was in large, solid clods. I decided to crush and sieve the clay through some strainers until a uniform grain size of about 0.5-1 mm was achieved. I had collected white and orange clods of clay from the roadside and I prepared these separately. I decided to divide the saucer containing clay into equal white and orange parts, in case colour or chemical content provoked a different response. The bright orange pigmentation of the clay is probably the result of iron staining over a long period of geological time, and we can assume this clay may be rich in iron. I sieved the garden soil separately to about 1-2 mm diameter grain size and placed this in a tray on its own. A third saucer was added, containing un-sieved garden soil mixed with quarter part fine sand and a half teaspoon of garden lime. A fourth saucer was added containing white clay lumps sorted to a coarse 4-10 mm diameter size.

Shortly after placing the saucers in the enclosure, I made an observation that was so bizarre that it at first seemed unbelievable. Instead of using the dirt and clay as a food, one of the katydids was observed performing a slow and rhythmical “dance” on the surface of the garden soil! The following morning I saw another female sweeping her tiny feet in slow circular motions across the surface of the white and orange clay.

She appeared to be caressing the surface, in a deliberate, slow, clockwise direction. She would stretch her legs out fully, and then retract them to her side through the course of each motion. She took turns with her front legs, and then did the same with her second pair of legs. She would occasionally alternate the motion between one leg of the middle pair and one leg of the front. Other times she would move a leg from both sides at the same time in a strange rowing manner. She would occasionally change position, moving her whole body around while performing the smoothing motions. At one time she seemed distracted by a small clod, and kept pushing it to and fro, as if it were a nuisance that kept spoiling the otherwise neat surface she was trying to prepare. Her focus, care, and



katydid_display by Ian Menkins (wild specimen photographed on Mt. Tamborine showing bluff posture when threatened)



attention to detail could only be described as meticulous and verging on the obsessive. I resolved to study this odd behaviour more closely.

That evening I watched a third female katydid walk on to the saucer of sieved garden soil. This one appeared to be scratching about with her front legs. She then did something truly remarkable. She dug out a small hole with her front feet, dog-style, and pressed her head down in this hole. She pushed the dirt from the hole under her thorax using her mid legs, and she pressed her body down over the small mound. She appeared to be in some distress for the next 30 seconds or so, stretching out her front two pairs of legs, and pushing against the soil, then pulling her legs back through the soil. Her hind legs were at all times slightly spread and positioned like long stilts to maintain her balance. She then arched her body, so that the end of her abdomen was touching her mouthparts. She raised her wing covers slightly to expose her brilliant banded colours. It soon became obvious that she was laying an egg! I then saw the flat seed-like egg emerge and she smeared it with the sticky gel from her mouth. After placing the egg in the hole, she immediately stood up and started pushing the dirt back into the hole, using her front and mid legs, and occasionally her hind legs. She then spent some time smoothing off the surface of the soil, making many of the rhythmical motions of her feet that I had observed previously. She was apparently making considerable effort to remove all traces of ever being there. She then moved on a bit further and repeated the whole process.

As time went by, I witnessed the katydids and their egg-laying habits many times on a daily basis. They showed no preferences with regard to colour of clay media, and would choose garden soil, garden/sand/lime mix, or clay without bias. However, I noticed that they visited the saucer containing the 4-10 mm diameter clay chunks a lot less frequently than the other saucers.

Individuals seemed to learn and develop their egg-laying technique as they got older, and the process got noticeably faster in older specimens. Some began to use a technique of mounding the earth slightly on top of the egg. Soon I began to see this “mounding technique” practised more often than the “smoothing off technique” that I had witnessed earlier. Due to the small space available in the saucers, many old eggs were getting dug out while new ones were being laid. I wondered if the practise of “mounding” became a strategy aimed at keeping newly laid eggs in place, or if this was purely coincidental. In any case, those eggs that were dug out often retained their granular coating of soil or clay. They were remarkably well camouflaged, as they looked just like small clods.

The placement of eggs on the gauze was seldom observed after the introduction of soil and clay to the cage. The few that were found attached to the gauze were located within a centimetre of the bottom. We can conclude then that the laying of eggs on the sides and top of a gauze cage is merely a surrogate method employed in the



absence of soil. We can also speculate that the vast majority of eggs of the mountain katydid are laid in the ground in this manner, and not placed up on tree branches as first assumed. Eggs laid in the ground would remain hidden from the view of surface-foraging predators, and protected from the fires that occasionally race through eucalypt communities and *Themeda* grasslands. Any eggs that get uprooted by digging animals, such as bandicoots, would remain cleverly disguised in their coating of soil granules and may therefore be missed by a potential predator.



egg_lay_soil by Ian Menkins. A female is scratching in a saucer of garden soil, while the one behind her investigates the kitty litter on the cage floor. Note the many eggs on the surface that have been exposed by subsequent egg laying activities!

When we consider that the eggs look like flat Acacia seed, there is also a possibility that ground-foraging ants may carry eggs into their underground chambers by mistake. The shells are extremely hard and persistent, so ants may find it impossible to reach the protein-rich meal developing inside. They may then discard the egg to an underground storage chamber. In such a constantly warm, humid environment, eggs may develop and hatch, leaving the ant-like nymph to scurry out of the hole to freedom. I did in fact witness a female katydid scratching in the loose crumbly soil around a bull ant's mound on Mt Tamborine. A more likely scenario in this case is that a buried egg will not be detected by the ants, but its placement on their mound ensures they will inadvertently protect it from predators. Clearly more studies into the habits of this katydid in the wild are required.

Several months ago I bought a much larger cage for my katydids and added some males and additional females. In my old cage I observed that females would continue to lay eggs freely, even in the absence of males; a habit that was also noted by Edith Coleman (1938b, p. 119).

However, I hoped that the addition of some males would provide fertile eggs to perpetuate the species in captivity. The new cage was too heavy to suspend so I rested it on the ground or placed it on a 1.5 metre high shelf. The cage has a 5 cm deep floor, which I filled with an organic "kitty litter" made from processed and pelletized rice hulls. The katydids immediately utilized the kitty litter as well as the original saucers of clay and soil for their remarkable egg planting habits. They have laid only a few eggs on the sides of the new cage and those are located within a centimetre of the floor. I had included many climbing sticks of different sizes, textures and colours in the new cage and can confirm my earlier finding that eggs are never laid on these.



Moreover, eggs have never been laid on the rocks I have placed in the new cage, regardless of how rough-textured, cavernous, or fissured those rocks have been. The katydids sometimes rest in the hollows and fissures, but they never lay their eggs in them. Through the course of my study I also confirmed that eggs are without exception laid **away** from the food source, as had been noted in previous captive studies conducted by Edith Coleman (1938a, p. 28), and Martyn Robinson (Australian Museum 2008, pers. comm., 15 January).

Since the 16th May, I have noticed females on a few occasions using their blunt frons and spade-like clypeus, labrum and mandibles to push out the small holes in the media prior to laying eggs. This is an interesting departure from the "dog-burying-bone" style of digging noted earlier. The technique has been observed mainly in the loose, coarser-textured media, such as the kitty litter and sieved garden soil, and to a lesser extent in the finer-textured clay or sandy-loam media. I have noticed it more frequently in warm weather when the katydid's metabolism is significantly higher than on cooler days.

Martyn Robinson observed eggs on ground litter, twigs, and grass stems during his captive studies in the past, and he described their appearance as being like "overlapping tiny watermelon seeds" (Australian Museum 2008, pers. comm., 15 January). He also observed eggs attached to grass stems when specimens had been enclosed in a bag with that material for a few days (Australian Museum 2008, pers. comm., 26 May). In forest country, mountain katydids have often been found near or under fallen bark (Alsemgeest, G 2008, pers. comm., 18 April; Brown, L 2008, pers. comm., 3 May; Daniels, G 2008, pers. comm., 14 February). I have also noted this association myself on a number of occasions. I have found female katydids sheltering beneath sheets of fallen bark, especially in dry western areas like Chinchilla. I have also observed adults and nymphs basking on flat stones, leaves and bark on the walking tracks at Mt. Tamborine.

I unfortunately omitted forest ground litter from my captive study this season. After all, I had originally added the soil and clay as a potential food supplement, without knowing that it would be used as an egg-laying medium! I assume that well-rotted ground litter would have similar properties to kitty litter, as it is loose and friable and has a very high porosity. A typical composition of forest litter may be dry leaves and twigs, dead grass, and well-rotted pieces of logs and bark. The mountain katydid may even utilize very coarse media like freshly fallen bark, flood debris, or loose gravel in the absence of other media. Any future trials will need to examine the katydid's preferences for ovipositing in different forms of ground and forest litter.

I managed to photograph the entire egg laying procedure (see following photograph), step by step on the night of 8th May 2008. Unfortunately some stages of the process are not as clear on the kitty litter as they would be on soil. I had to rely on light from a flash beneath a fluorescent reptile light. My enclosure is not really designed for ease



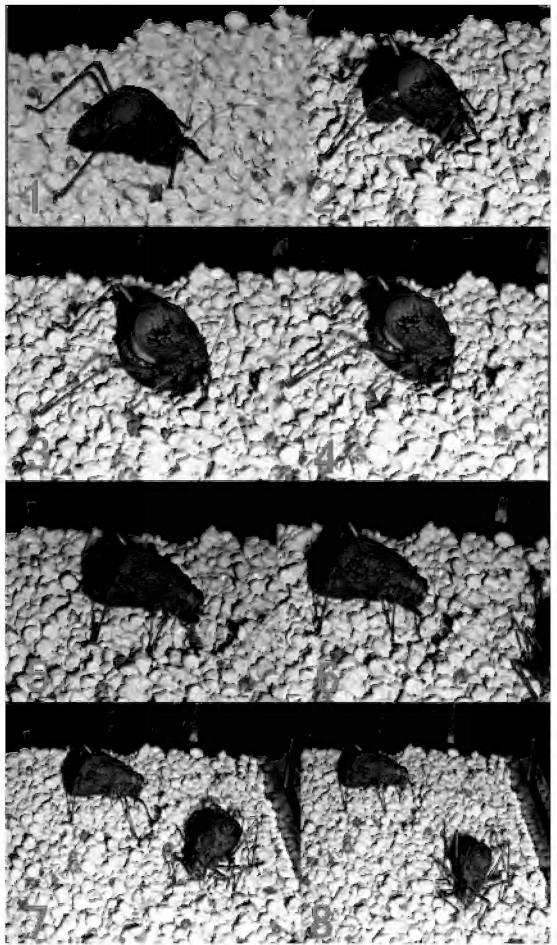
of photography, and katydids do not always lay where conditions are ideal for photos. So I was not in a position to be choosy when the event presented itself in an accessible position.

1. The female katydid scratches out a small hole in the kitty litter using her front pair of legs. She presses the front of her head into the hole and pushes some of the litter under her thorax.

2. She begins to arch her body over the small mound and slowly bends her abdomen forwards, keeping her head pressed into the hole at all times. She may perform this step briefly, or spend some minutes in this position, pushing and pulling her front two pairs of legs through the litter. These motions are undoubtedly akin to contractions in vertebrates.

3. She bends her abdomen right under herself until it touches her mouthparts. The colours of her bluff posture show prominently from under her wing covers, perhaps as a defence against predators while she is otherwise distracted.

4. The egg emerges (difficult to make out in the photo unfortunately), and she smears it with a sticky fluid from her mouth before depositing it in the hole.



Ian Jenkins, 27th May 2008

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Coleman, E 1938a, 'New Notes on Australian Mountain Grasshoppers, *Victorian Naturalist*, vol. 55, no. June, pp. 24-32. Field Naturalists Club of Victoria.

----- 1938b, 'Further Notes on the Mountain Grasshopper, *Acridopeza reticulata* Guerin', *Victorian Naturalist*, vol. 55, no. November, pp. 119-122, Field Naturalists Club of Victoria.



Report on a Field Trip to Stanage, Central Coastal Queensland

During the first week of April 2008, five members of BOIC spent six days collecting and observing butterflies and moths at Stanage (22° 08' S 150° 03' E), a small fishing hamlet of about 40-50 permanent residents on the coast approximately 175 km north north west of Rockhampton.

Andrew Atkins, Graham Forbes, Wesley Jenkinson, Ross Kendall and John Moss



visited this historic corner on the Queensland coast (Cook made it his next landfall after the site of the present day Town of 1770). The main aim was to investigate reports of unusual sightings of butterflies that are usually found much further north than at this latitude. After a week of activity none of the reports could be corroborated but the area of approximately 20 sq. km yielded 76 species of

butterflies. Light trapping for moths at three locations yielded rather poor results. However some interesting moth larvae were found during our daytime excursions.

Collecting was carried out in areas of coastal vine scrub, mangroves, elevated exposed headlands, grasslands, estuarine flats and open eucalypt woodlands. No true rainforest was encountered although it is found further south at Byfield N.P. This diversity of habitats no doubt explains the high number of species present.

The first thing that we noticed was the enormous Grass Yellow population – four species being found, two of which were present in their thousands. The second was the large number of Orchard Swallowtails also present and the unusually large size of the females. One of these gliding around the top of a 30 m tree made us do a double-take as it initially looked like a female Cairns Birdwing! Interestingly it was discovered that these Papilios were feeding on native rutaceous plants and few exotic citrus trees were to be seen in the area.

One question that remained unanswered was “Where were all the Bushbrowns and Ringlets?” Only one species of Ringlet was taken and even allowing for the time of year this could not be easily explained as the area was so rich in butterflies generally and the host plants of these Satyrids were abundant.

A large variety of larvae and pupae were collected and interesting host plant records were made. Further specific articles are planned for the newsletter to more fully



acquaint our members with the results of our trip. A visit to this spot by any of our members is recommended, as they would be certain to enjoy this unspoiled area that boasts excellent accommodation facilities, great visual beauty, a wide variety of natural history delights and a plentiful supply of delicious mud crabs!

Note - full list of species recorded will be in issue 50?

Graham Forbes

AT THE LIGHT TRAP

The Night of the Crambidae!

Over the Easter break I spent a few nights light trapping at my bush block west of Bundaberg. Arriving in the dark on Thursday night, the first job was to set up the light trap and kick-start the generator, all to little or no avail. I think the moths stayed at home as it proved to be a very quite night. Friday night was not much better. On Saturday we had some afternoon showers and the night sky was clouded, covering the full Easter moon, and out they came. It was hard to believe I was at the same spot as the previous two nights, what a difference twenty-four hours makes. While the number of moths had increased considerably I noticed a large proportion were moths of the Crambidae family. In all fifteen different species arrived in various quantities of each species. This may not seem a lot but it is the most crambids I have seen in one night.

The family Crambidae was originally included with Pyralidae. In 1972 Munroe separated them out, based on the presence or absence of an organ called the praecinctorium. Some authors argue whether this distinction merits division into two families, but it now seems to be generally accepted, though the recent publication, *A Guide to Australian Moths* (Zborowski & Edwards, 2007), has them placed with the Pyralidae.

One of the most exquisite crambids to arrive was *Margarosticha repetitalis*. This stunning little species belongs to the subfamily Acentropinae, which are aquatic moths that undergo their entire development in the water - the larvae actually have gills and feed on water plants. The genus is represented in Australia by two other members, *M.sphenotis* and *M. euprepialis*, both of which, from images I have seen, appear impossible to tell apart. A fourth species *M.australis*, very similar to *M.sphenotis* and *M. euprepialis*, is figured in Ian



Margarosticha repetitalis



Common's Moths of Australia - this name now seems to apply to a New Guinea species.

I must point out that moths in the subfamily Acentropinae (Stephens, 1835) have in Australia, and elsewhere, always been referred to as being members of the subfamily Nymphulinae (Duponchel, 1845). The International Commission on Zoological Nomenclature in March 2003 ruled this name, in spite of many strong arguments against it, not to take precedence over the earlier name Acentropinae.

Another aquatic related moth, *Parapoynx stagnalis*, appeared. It is also a member of the subfamily Acentropinae. The caterpillars are semi-aquatic (Lefroy, 1902) and have tubular external tracheal gills for respiration (Viraktamath et al., 1974). The larva known as the Rice Caseworm is a serious pest of rice. The presence of these aquatic species is a reflection of the habitat. The creek, at which I light trap, has held water for the past eighteen months, after a long dry spell.



Parapoynx stagnalis



Cnaphalocrocis medinalis male



Cnaphalocrocis medinalis female

All the other crambids that appeared that night belong the subfamily Pyraustinae. This is the largest Crambidae subfamily in Australia and the third largest on world rankings. *Cnaphalocrocis medinalis*, while not aquatic, is also a pest in rice fields. A swelling on the costa of the forewing identifies the males and from the images the “knee joints” on the fore legs appear swollen as well.





Dichocrocis clytusalis



Omiodes diemenalis

The Kurrajong Leaf-tier or Kurrajong Bag Moth, *Dichocrocis clytusalis*, feed on species of *Brachychiton*, two of which occur on the block.

The Bean Leafroller, *Omiodes diemenalis*, feeds on plants in the Fabaceae family. There are several bean species on which *O. diemenalis* feeds and is regarded as a pest. This species was the commonest on the night and has also appeared at home (Sheldon) on several occasions.

Other interesting species included *Agrioglypta excelsalis*, which feeds on sandpaper figs and *Glycythyma leonine* for which I could find no lifecycle data. *Haritalodes derogata* feeds on plants in the family Malvaceae, including cotton and hibiscus. The delicate *Analyta sigualis* is another whose lifecycle eludes me.



Agrioglypta excelsalis



Glycythyma leonina

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Photos by Peter Hendry

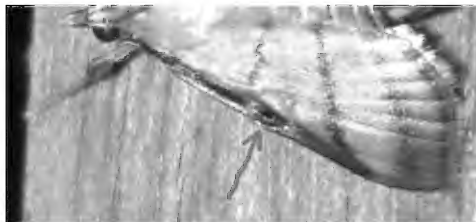
Peter Hendry

Footnote:

The following is a reply I have just received from Ted Edwards regarding the swelling on the costa of *Cnaphalocrocis medinalis*

“The costal scale tufts on *Cnaphalocrocis medinalis* males are probably for the dissemination of pheromones. I doubt if this particular species has been experimented on but this would be the most likely explanation. The scale tuft would perform the same function as does the sex brand in Hesperiidæ and the abdominal hair pencils of danaine butterflies. In moths there are a few groups where scale tufts are on the costa and this makes sense as the costa is easy to effectively fan in the air. Like the butterflies it is probably a pheromone mix that is effective in close proximity, more as an identity check than an attractant.

There is no reason to suppose that *C. medinalis* does not use long distance pheromones produced by the female for attraction at a distance. Many Tortricidæ also have costal scent scales but they are often hidden in a fold of the wing which can be opened up.”



Costal scale tufts on male
Cnaphalocrocis medinalis

EXCURSION REPORT

Brisbane Forest Park Excursion Report – Sunday 16th March, 2008

The meeting point for this excursion was at the Brisbane Forest Park headquarters on Mt Nebo Road, The Gap... however, the headquarters were so full of invertebrates that we ended up spending most of the day there! The original idea was to meet at the headquarters, and then travel together to various other sites in the surrounding area, such as Jolly's Lookout. Before driving off to the lookout, we decided to walk a track that left from the headquarters to the reservoir nearby. The reservoir was a known location for spotting invertebrates such as damselflies and dragonflies.



Without taking a single step we came across our first invertebrate – a lovely green stick insect, clinging to a sign at the entrance of the headquarters. A few steps away from the entrance was an interesting Ant Plant (*Psydax odorata*, previously *Canthium odoratum*), so called because the swollen, hollow branchlets provide homes for a species of ant.

We continued down the track, spotting at least 14 species of butterflies along the way, as well as several beetle, dragonfly and damselfly species. Not bad for an overcast day. Tiger moths were observed,



Paropsis larva

as well as a large, brown, hawk moth larva and several unidentified moth larvae of various shapes and colours. Numerous host plants were also encountered, such as Love Flower (*Pseuderanthemum variable*) and Cressida Pipe-flower (*Aristolochia* D'Aguilar Range). The track yielded so many invertebrate species that even a burst of rain didn't spoil our excursion. We continued on once the rain eased, and encountered

adult and larval Brown and Spotted Paropsine Beetles (*Paropsis maculata* and *P. immaculata*). Colourful Sawfly larvae were also observed. Several Imperial Hairstreak larvae attended by ants were seen on an *Acacia*.

The track leading from the headquarters took much longer to walk than anticipated, due to the large number of invertebrate sightings. With large numbers of sightings comes large numbers of photo opportunities for members, which is often time

consuming – particularly as many invertebrates do not sit still!



Orb Weaver eating Evening Brown

A pupa of a White Banded Plane attached to a Flame Tree proved much more cooperative, rewarding a few of us with some photos of its golden, glistening skin towards the end of the walk. Just prior to this, we observed an Orb Weaver Spider devouring an Evening Brown

Butterfly, which proved to be both saddening and fascinating. By this stage some of us were



ready to call it a day. The remaining members decided to save the Jolly's Lookout journey for another time, and had lunch in the Bellbird Grove day use area. After lunch, we walked the Turrbal Circuit Trail that encircled Cedar Creek. Here we saw an adult Leafwing Butterfly, causing immense frustration for the photographers amongst us as it repeated a cycle of stopping momentarily, flapping its wings for several metres, then stopping again.

Cedar Creek was dry in some sections, and dotted with small pools in others. We observed some aquatic backswimmers (Notonectidae) in some of these pools that were living in only a few centimetres of water. When conditions become unfavourable, Notonectids are able to fly away to a more suitable pool.



Cedar Creek

In hindsight, it was ambitious to plan an excursion that would take in some many potential sites. Brisbane Forest Park is such a diverse and extensive area to explore. We would like to run a second and perhaps even a third instalment of this excursion in the near future –meeting at the Brisbane Forest Park headquarters for ease, then travelling up to Jolly's Lookout, before making our way to a lunch spot at Mt Nebo or Mt Glorious. The beauty is that this park is so close to the heart of Brisbane. I look forward to planning and attending a future excursion to this wonderful park.

Photos by Alisha Steward

Alisha Steward

List of common names of butterfly species encountered (adults, larvae (L), pupae(P)):

Brisbane Forest Park Headquarters: Lemon Migrant, Small Grass Yellow, Orchard Swallowtail, Evening Brown, Pearl or Chalk White?, Orange Ringlet, Unidentified Skipper, Common Crow, Speckled Line Blue, Leafwing (L), Imperial Hairstreak (L), Clearwing, Blue Tiger, White Banded Plane (P).

Bellbird Grove Day Use Area: Blue Triangle, Meadow Argus, Wanderer, Leafwing, Orchard Swallowtail (L), Common Crow (P)

Zodiac moths (*Alcides metaurus*) (Hopffer, 1856) at Redcliffe

In March this year, club member Brian Beutel found two specimens of the Zodiac moth feeding on flowers in his garden at Redcliffe.

This moth is known from northeastern Queensland at Iron Range and from Cooktown to Mackay (Common, 1990). This unexpected occurrence about 1000km south of its





underside

upperside

Zodiac moth at Redcliffe

Photos by Ross Kendall

known southern limit is quite noteworthy. None of the known host plants (*Omphalea queenslandiae* and *Endospermum* species in the family Euphorbiaceae) occur naturally in southeastern Queensland.

We would be interested to hear of other sightings outside the moth's commonly accepted northern range.

Ross Kendall

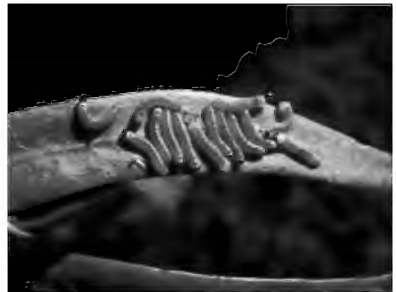
Reference: Common. I.F.B., 1990 Moths of Australia: Melbourne University Press

NEW HOST PLANT

Another new host plant for the Black Jezebel butterfly (*Delias nigrina*)

On Easter Saturday in March this year, at Upper Thane Creek west of Warwick, Queensland, while examining a Bronze or Box Mistletoe (*Amyema miquelii*) parasitising a eucalypt I found that this mistletoe was itself hyper-parasitised by another mistletoe, the Fleishy Mistletoe (*Amyema mirabilosa*).

I then noticed a cluster of eggs on young growth of the *A. mirabilosa*. The eggs appeared to be those of either *Delias argenthona* or *Delias nigrina*. I collected the eggs and, after the larvae hatched, identified them as *D. nigrina*. Having raised them through to adults on *A. mirabilosa*, I can now confirm that this mistletoe may now be added to the list of confirmed host plants of *D. nigrina*.



Delias nigrina on *Amyema mirabilosa*

Photo by Ross Kendall

Ross Kendall

UNDER THE MICROSCOPE



The Club microscope is currently residing with Bob Miller in North Queensland. Bob has sent this photo of a scrub-itch tick (scientific name unknown). Recently, whilst walking in the bush at Tolga on the Atherton Tablelands, Bob was host to about 200 of these wee beasties. The ticks are so small that they can only be seen through a microscope! This one was taken with a magnification greater than 150X.



LETTERS



Hi Daphne

We would like to share a very special event which occurred around 4.15pm one afternoon before Easter. We were enjoying our afternoon cuppa on our back deck when a large iridescent green butterfly went soaring down our backyard at Fairfield. Realising what this could be we grabbed our camera and binoculars and followed. Sure enough there he was a beautiful male Richmond Birdwing gliding around the tops of our trees, one of

which supports our *Pararistolochia praevenosa* vine of 15 years. With the aid of a ladder and zoom lens we managed to get a photo which we have attached. Could this be an escapee or a result of dedicated conservation measures? We would be interested to learn if others have been as privileged as we were. Congratulations on your new newsletter format. What a difference the colour makes.

Sincerely **Pat Jonsson**

Hi Daphne

I read with interest my article on 'Butterflies at Hinterland Regional Park' and noted that on p 23 of Issue 48 that we had not yet attracted the Richmond Birdwing (*Ornithoptera richmondia*) or the Southern Sedge-darter (*Telicota eurychlora*) to our plantings. That article was written in 2005. However, since then we have observed adult female Richmond Birdwings ovipositing on 3 occasions, and noted several larvae on the vines particularly in summer 2006 but also in summer 2007.

Here's hoping for a permanent breeding population of birdwings. The caterpillars are getting harder to see as the vines now reach the canopy. I observed the first Southern Sedge-darter just two weeks ago (Feb 2008) in the area where we planted its host species - *Cladium procerum* and *Carex polyantha*. Three other species that have appeared since 2005 are Eastern Dusk-flat (*Chaetocnema beata*), Chequered Swallowtail (*Papilio demoleus*) and Narrow-banded Awl (*Hasora khoda*).



Papilio demoleus sthenelus

Photo by Ross Kendall

Graham McDonald



WHAT BUG IS THIS?



Leptocorisa acuta
Adult

Answer - The Slender Rice Bug (*Leptocorisa acuta*) (Thunberg)

In our last newsletter, we printed an image of a bug that I had photographed in my garden last February. Dr Don Sands phoned me after reading the newsletter having immediately recognized the bug. It, and other members of the genus, in Papua New Guinea was the subject of Don's 1975 master's thesis.

The bug is found in Australia, Bhutan, China, Fiji, India, Indonesia, Malaysia, Mauritius, Myanmar, New Caledonia, Papua New Guinea, Philippines, Samoa, Sri Lanka, Taiwan, Thailand, Tonga and Vietnam.

While the primary hosts of *L. acuta* are grasses including rice, some secondary hosts are breadfruit, tea, mango, millet, beans and guava.

Both adults and nymphs feed on rice grains at the milking stage and are a serious pest across South East Asia and New Guinea as they can substantially reduce the yield of rice crops. Don reports that they have little impact on yields in Australia even though they can be found in large numbers in some parts of the tropics.

Eggs are laid in batches of 10 to 20 in up to three rows on the midrib on the upper surface of leaves. The nymphs pass through five instars. Young nymphs are pale in colour while later nymphs are yellowish green. Adults are 16mm long.

Ross Kendall

WHAT MOTH IS THIS?



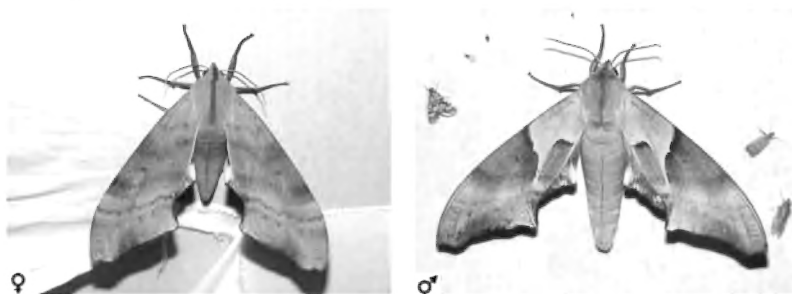
Answer - *Coequosa australasiae*

Ross's mystery moth from the last newsletter is *Coequosa australasiae*, a member of the Sphingidae family, subfamily Springinae. It is one of only two *Coequosa* species and is endemic to Australia. It was once known as *Metamimas australasiae* and was originally named *Sphinx australasia* by Donovan in 1805.

C. australasiae is a large moth with a wingspan of about 120mm. It has a distribution from Cairns to southern coastal New South Wales and is one of the few hawk moths whose larvae do not have a dorsal "horn" at the rear. Unusually, the larvae feed on eucalypts (fam. Myrtaceae).



Last summer, I had this species come to light at my bush block west of Bundaberg and here at Sheldon in Redland City. The specimen collected and photographed by Ross Kendall in January this year is from Upper Thane Creek west of Warwick, Queensland. Dr Margaret Greenway collected another prepupal larva in leaf litter at Cornubia, Logan City in January this year.



Coequosa australasia – Photos by Peter Hendry



Last instar larva - Photos by Ross Kendall - Pupa

Peter Hendry

BUTTERFLY AND OTHER INVERTEBRATES CLUB PROGRAMME

Indigi Day Out 7th and 8th June, 2008 – We held a display at this event

Outside and Alive Festival, Moreton Bay Regional Council

What: We will be holding a display at the Lowlands Festival of this event
 When: **31st August, 2008** from 11am to 3pm
 Where: Osprey House, Dohles Rocks Rd., Griffin

SGAP Spring Flower Show and Plant Sale

What: We will be holding a display at this event
 When: **20th and 21st September, 2008**
 Where: Mt. Coot-tha Botanic Gardens



DISCLAIMER

The Newsletter seeks to be as scientifically accurate as possible but the views, opinions and observations expressed are those of the authors. The Newsletter is a platform for people to express their views and observations. These are not necessarily those of the BOIC. If inaccuracies have inadvertently occurred and are brought to our attention we will seek to correct them in future editions. The Editor reserves the right to refuse to print any matter which is unsuitable, inappropriate or objectionable and to make nomenclature changes as appropriate.

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We would like to thank all these people for their contribution.

Dedicated to a better Brisbane

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Please check your mailing label for the date your membership is due for renewal. If your membership is due, please renew as soon as possible. **Membership fees are \$20.00 for individuals and \$25.00 for schools and organizations.** If you wish to pay electronically, the following information will assist you: BSB: **484-799**, Account No: **001227191**, Account name: **BOIC**, Bank: **Suncorp**, Reference: your membership no. and surname e.g. **234 Roberts**.

Butterfly and Other Invertebrates Club Inc.
PO Box 2113
RUNCORN Q. 4113

Forthcoming events – Outside and Alive Festival – 31st August 2008
SGAP Spring Flower Show – 20th & 21st September 2008



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